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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,792	12/29/2005	Kenya Hori	0438887-0182	8756

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EXAMINER	
SANEI, HANA ASMAT	
ART UNIT	PAPER NUMBER
2889	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,792	HORI ET AL.	
	Examiner	Art Unit	
	HANA A. SANEI	2889	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

yesDETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 4/20/09 has been entered.

Cancellation of claim(s) 2 have been entered.

Claim(s) 1, 3-8 are pending in the instant application.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim(s) 1, 3, 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobson et al (US 6265823 B1) in view of Klabunde (U.S. Pat. No. 5990373).

Regarding Claim 1, Dobson teaches a pair of electrodes (2, 6, “electrodes,” Col. 1, lines 6-11 & Col. 2, lines 26-28; See at least Fig. 1) facing each other; and a phosphor layer (“semiconductor quantum particles," used in the electroluminescent light emitter, Col. 4, lines 15-18) interposed between the pair of electrodes (2, 6) and including a semi-conductive phosphor fine particle in which at least a part of a surface is covered with a conductive organic material (“quantum particle layer embedded in polymers such as PPV or PVK," Col. 4, lines 47-50), wherein the conductive organic material (PVK, poly-n-vinylcarbazole, Col. 4, lines 47-50) is chemically adsorbed on the surface of the semi-conductive phosphor fine particle (“quantum particle layer," Col. 4, lines 47-50). It should be noted that since poly vinylcarbazole contains an amino functional group, chemical adsorption does take place. Dobson fails to explicitly teach a dehydration process.

In the same field of endeavor of **chemical adsorption processes**, Klabunde teaches a dehydration reaction of a hydroxide group (*conventional*, Col. 3, lines 28-32) in order to adequately form an adsorbed surface with suitable mechanical improvements as taught by conventional processes.

In light of this teaching, Examiner reasonably contemplates that it would have been obvious to one of ordinary skill in the art, at the time of the invention, to add a

dehydration reaction between a hydroxide group of the surface of Dobson's semi-conductive phosphor fine particle and the conductive organic material, as disclosed by the teaching of Klabunde, in the device of Dobson in order to adequately form an adsorbed surface with suitable mechanical improvements as taught by conventional processes.

Regarding Claim 3, Dobson teaches that the semi-conductive phosphor fine particle ("semiconductor quantum particles," Col. 4, lines 15-18) has a particle diameter of 1 μm or less ("semiconductor quantum particles is intended as reference to semiconductor material in shapes having thicknesses in one or more dimensions approximately of the order of 1-50 nm," Col. 1, lines 25-29).

Regarding Claim 5, Dobson teaches that the phosphor layer ("semiconductor quantum particles," Col. 4, lines 15-18) is so configured that the semi-conductive phosphor fine particles are dispersed in a transparent conductive matrix ("quantum particle layer embedded in polymers such as PPV or PVK," Col. 4, lines 47-50). It should be noted that poly vinylcarbazole are characteristically transparent.

Regarding Claim 6, Dobson teaches that an electron transport layer ("electron transporting layer," Col. 4, lines 50-54) between the phosphor layer ("semiconductor quantum particles," Col. 4, lines 15-18) and at least one of the electrodes (2, 6).

2. Claim(s) 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobson et al (US 6265823 B1) in view of Klabunde (U.S. Pat. No. 5990373) in further view of Tsukada (US 4937150).

Regarding Claim 4, Dobson-Klabunde teaches the invention set forth above (see rejection in Claim 1 above). Dobson-Klabunde fails to teach semiconductive phosphor fine particles including oxides from the group consisting of Zn, Ga, In, Sn and Ti.

In the same field of endeavor of **semiconductive phosphor fine particles**, Tsukada teaches an electroluminescent element (Col. 5, lines 14-16) having a semiconductive phosphor fine particle ("ultrafine grains of luminescent material," Col. 3, lines 1-3) including oxides from the group consisting of Zn, Ga, In, Sn, and Ti (ZnO:Zn, Col. 3, lines 29-32) in order to provide an *ultrafine* electroluminescent element with the capability to exhibit high luminance while being driven at a low voltage (Col. 3, lines 25-27). Furthermore, Tsukada teaches that the semiconductive phosphor fine particle is provided as either sulfides (as was taught by Dobson) or as oxides (Col. 3, lines 29-33), thus exemplifying recognized equivalent materials of the semiconductive phosphor fine particles in the art.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the composition of the semiconductive phosphor fine particle, as disclosed by Tsukada, in the EL device of Dobson-Klabunde in order to provide an *ultra-fine* electroluminescent element with the capability to exhibit high luminance while being driven at a low voltage.

3. Claim(s) 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobson et al (US 6265823 B1) in view of Klabunde (U.S. Pat. No. 5990373) in further view of Hseuh et al (US 5587329).

Regarding Claim 7, Dobson-Klabunde teaches the invention set forth above (see rejection in Claim 1 above). Dobson-Klabunde fails to *exemplify* the use of thin film transistor.

In the same field of endeavor, Hseuh teaches an active matrix for an electroluminescent display as conventional in the art ("thin film active matrix electroluminescent displays are well known in the art and are used as fiat panel displays in a variety of applications, Col. 1, lines 16-18). Hseuh teaches the suitability of using a thin film transistor connected with at least one of the pair of electrode (See at least Figs. 1 & 2l) for the purpose of essentially preventing crosstalk between respective pixels as a result of the actively driven matrix.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the driving of the electroluminescent device, as disclosed by Hseuh, in the invention of Dobson-Klabunde in order to ensure the prevention of crosstalk between respective pixels and to choose from one of the configurations disclosed by Hseuh, since Hseuh teaches the suitability of using an active driven electroluminescent device and it has been held to be within the general skill of an artisan to select a known material or configuration on the basis of the intended use [See MPEP 2144.07].

4. Claim(s) 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dobson et al (US 6265823 B1) in view of Hseuh et al (US 5587329).

Regarding Claim 8, Dobson teaches a luminescent array (See at least Fig. 1) in which phosphor elements ("semiconductor quantum particles," used in the

electroluminescent light emitter, Col. 4, lines 15-18) are arranged in a plane (in the vertical axis, y-axis, Fig. 1), wherein the phosphor element comprises: a pair of electrodes (2, 6, “electrodes,” Col. 1, lines 6-11 & Col. 2, lines 26-28) facing each other; a phosphor layer (“semiconductor quantum particles," Col. 4, lines 15-18) interposed between the pair of electrodes and including a semi-conductive phosphor fine particle (“semiconductor quantum particles," Col. 4, lines 15-18) in which at least a part of a surface is covered with a conductive organic material (“quantum particle layer embedded in polymers such as PPV or PVK," Col. 4, lines 47-50). Dobson fails to exemplify the use of thin film transistor.

In the same field of endeavor, Hseuh teaches an active matrix for an electroluminescent display as conventional in the art (“thin film active matrix electroluminescent displays are well known in the art and are used as fiat panel displays in a variety of applications, Col. 1, lines 16-18). Hseuh teaches the suitability of using a thin film transistor connected with at least one of the pair of electrodes (See at least Figs. 1 & 2l); a plurality of x electrodes (114, “select line,” Col. 2, lines 64-65), in parallel with each other, extending in a first direction in parallel with a face of the luminescent array; and a plurality of y electrodes (116, “data line,” Col. 2, lines 65-66) extending in parallel with a second direction, orthogonal to the first direction (114 being orthogonal to 116), in parallel with the face of the luminescent array, wherein a thin film transistor (TFT, Fig. 1 via 102) of the luminescent array is connected with the x electrode and the y electrode, respectively (See at least Figs. 1 & 2l) for the purpose of essentially preventing crosstalk between respective pixels as a result of the actively driven matrix.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the driving of the electroluminescent device, as disclosed by Hseuh, in the invention of Dobson in order to ensure the prevention of crosstalk between respective pixels and to choose from one of the configurations disclosed by Hseuh, since Hseuh teaches the suitability of using an active driven electroluminescent device and it has been held to be within the general skill of an artisan to select a known material or configuration on the basis of the intended use [See MPEP 2144.07].

Response to Arguments

Applicant's arguments filed on 4/20/09 have been fully considered but they are not persuasive.

A. In response to Applicant's arguments that Dobson et al (U.S. Pat. No. 6265823) does not disclose "a luminescent array in which phosphor elements are arranged in a plane," the Examiner respectfully disagrees.

Dobson does indeed teach a luminescent array (See at least Fig. 1) in which phosphor elements ("semiconductor quantum particles," used in the electroluminescent light emitter, Col. 4, lines 15-18) are arranged in a plane (in the vertical axis, y-axis, Fig. 1). As cited previously, the luminescent array includes vertical regions extending along a vertical axis.

Additionally, the phrase "phosphor elements arranged in a plane" does not limit the phosphor elements to only a single plane. Therefore, should the prior art include a plurality of planes (along any or both x- and y-axis or a plurality along the y-axis), the

claim limitation(s) will be clearly met by the standards set forth in the current claim language filed 4/20/09.

B. Applicant's arguments with respect to Claim 1 and each of the claims depending therefrom have been considered but are moot in view of the new ground(s) of rejection, due to amendment(s).

For the reasons stated above, the rejection of the claims is deemed proper.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hana A. Sanei whose telephone number is (571)-272-8654. The examiner can normally be reached on Monday- Friday, 9 am - 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minh-Toan Ton can be reached on (571) 272-2303. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Toan Ton/
Supervisory Patent Examiner
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/ Hana A. Sanei /
Examiner